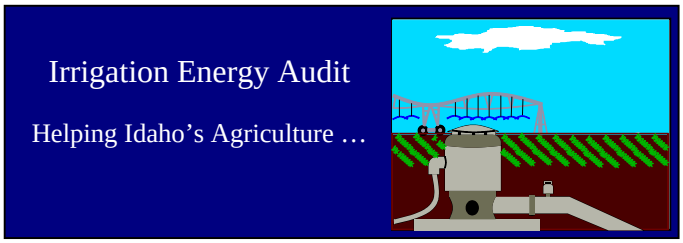
Agriculture Irrigation Energy Audit Program



The Idaho Energy Division is providing the Irrigation Audit program. The program has limited funds and terms of the program may be changed or terminated at any time by the Energy Division. The Energy Division qualifies contractors but the contractors do not work for the Energy Division or the State of Idaho and are solely responsible for any damages that may occur during the audit.

Safety:

Auditors are responsible for their own safety. If an auditor determines an area around the pump or system to be audited unsafe the audit will not be performed. An example of this would be a situation where wires are lying above ground, frayed and in water.

Always touch any electrical equipment with the back of your hand first.

Note: Recipients of any part of the audit are not obligated to purchase any full service or other service not described by this program.

Agriculture Irrigation Energy Audit Program

What is the Agriculture Irrigation Energy Audit Program?
The Agriculture Irrigation Energy Audit Program is an incentive program intended to improve the overall irrigation system efficiency and encourage conservation in Idaho's irrigated agriculture.

The program is funded by the Idaho Energy Division which receives its funding from the Department of Energy.

How long will the Program be active?
The Program is initially slated for 100 audits. However the Program may be extended or terminated without notice.

What does the Program do?
The program has four parts:

1. Educational
   Seminars will be given in cooperation with irrigation equipment dealers on:
   How to maintain an efficient system
   How much water is being pumped
   How much energy is being used

2. Technical Assistance
   Program personnel are available to assist in locating auditors, completing forms for audit or loan, or answering general questions as to pump plant and system design and use.

3. Audit
   The audit is divided into 2 parts. One part consisting of a pump test and the second part consisting of an irrigation system analysis.

4. Loan
   Participants who receive the audit will be eligible to apply for a loan from the Energy Division for the repair of equipment or modification needed to improve system performance.

Who is eligible to participate?
All owners or users of irrigation systems can participate in the Program with the exception of local, state, or federal government. Priority will be given to larger systems where the greatest energy savings can be seen.

How can I participate?
1. Education – Anyone is welcome to attend the educational seminars. Notice of upcoming dates will be available on our web site at:
   www.idwr.state.id.us/energy/

2. Technical Assistance – Personnel will be available at all educational seminars and at the Energy Division office to assist you.

3. Audits – Audits are available to any non-government entity. For a list of qualified auditors contact the Energy Division.

4. Loan – A loan for the repair/upgrade of the pump or system can be obtained by any qualifying recipient of the audit program. You will need to fill out a loan application form and send it to the Energy Division.

Are there any system requirements?
Yes. The system to be tested must be at least 3 years old or older. The program assumes that pump and systems were matched when initially installed. It has been shown in studies and is recommended that pumps be tested every three years or less depending on the water quality.

How do I contact the Program?
The Program can be contacted by calling the toll free number 800-334-SAVE or by email at AIM@idwr.idaho.gov.

More about the Audit
The audit is divided into 2 sections, a pump test and a system analysis. The results of either part of the audit will be reported to the Energy Division with the information being kept confidential. The results of the pump test will include pumping plant efficiency, calculation of kilowatt-hours used, motor loading and estimated energy and dollar savings resulting from repair/upgrade. The irrigation system analysis will include checking nozzles, mainlines, valves, pressure checks at the start and end of laterals and an estimated energy and dollar savings resulting from repair/upgrade.

Note: Eligibility rules

Audits must be for the purpose of determining overall pump or system efficiency. Audits are not available for any purpose related to real estate transactions or to satisfy a mandate of federal, state, or local government.

The pumping plant is defined as:

- The inlets that can be well water, or suction piping.
- The pump power source and transmission works.
- The pump itself.
- Discharge piping within 10 feet of the pump.

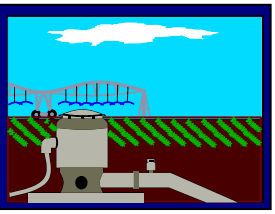
The system is defined as:

- All filters, valves and piping beyond 10 feet of the pump.
- Any connection point that connects mainlines to laterals. Laterals being considered as such equipment as pivots, wheelines, or handlines.
- A system will be seen as all irrigation equipment in one field.

Auditors are expected to perform the audits in a professional and ethical manner. Complaints about an auditor should be directed to the Energy Division.

Irrigation Energy Audit

Helping Idaho's Agriculture …



Irrigation Energy Audit
Pump Test Report

Customer Name/Address: _____ **Tester:** _____

_____ **Date:** _____

_____

Pump Make: _____ **HP:** _____

Meter Number: _____ **Voltage:** _____ **Amps:** _____

Is the area for the audit safe? Y N

Test Date:

1. **Standing water level (ft)** _____
2. **Pumping water level (ft)** _____
3. **Draw down (ft)** _____
4. **Recovered water level (ft)** _____
5. **Discharge pressure at gauge (psi)** _____
6. **Total lift (ft)** _____
7. **Flow velocity (ft/sec)** _____
8. **Measured flow rate (gpm)** _____
9. **Well specific capacity (gpm/ft draw)** _____
10. **Acre feet per 24 hr** _____
11. **Cubic feet per second (cfs)** _____
12. **Horsepower input** _____
13. **Percent of rated motor load** _____
14. **Kilowatt input to motor** _____
15. **Kilowatt hours per acre foot** _____
16. **Energy cost per hour** _____
17. **Name plate rpm** _____
18. **RPM at gear head** _____
19. **Overall plant efficiency (%)** _____

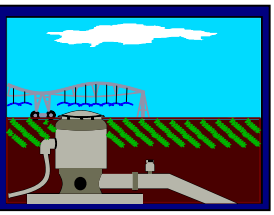
Signature: _____

Recommended changes: _____

_____

Irrigation Energy Audit

Helping Idaho's Agriculture …



Irrigation Energy Audit
System Analysis Report

Customer Name/Address: _____ **Auditor:** _____

_____ **Date:** _____

_____

Is the area for the audit safe? Y N

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System Type: Pivot Linear Wheeline Solid set

Acres irrigated: _____ **System flow rate:** _____
(gpm / acre-ft per hour / miners inches per hour)

Canal or Well Water: Canal Well

Mainline length (ft): _____ **Mainline size(s):** _____

Filter(s): _____ **Flow Meter: Y N**

Pressure at Source (psi): _____ **Pressure at laterals if gravity feed only (psi):**

Valve type(s): _____ **Valve size(s):** _____

Estimated # and size of fittings:

Pivot_____

System Length: _____ **Number of spans:** _____

Pressure @pivot point (psi): _____ **Pressure @ end of system (psi):** _____

Valve @ pivot point: Y N **Valve size @ pivot point:**

Valve leaking @ pivot point: Y N

Tire pressures all the same: Y N **Are motor leads worn: Y N**

Nozzle type: impact rotating spray fixed spray lepa

Nozzles all the same: Y N **Are nozzle drops leaking: Y N**

Nozzle output check (size/gpm): _____

Pressure regulators: Y N **Pressure regulator size (psi):** _____

Pressure regulator check (psi out): _____

Span boots leaking: Y N **Span drains working: Y N**

End gun: Y N **End gun shutting off: Y N**

Are strain reliefs on wires in control box and tower boxes: Y N

Pipe line gaskets leaking: Y N **U-joints checked: Y N**

Gearbox leaking: Y N If Yes how many:_____

Corner

Corner: Y N **Corner hose leaking: Y N**

Cradle and rollers checked: Y N **Is tubing harness connected: Y N**

Linear

Linear type: Hose drag Ditch feed

System feed: End Center

Power type: Electric Diesel

System Length: _____ **Number of spans: _____**

_

Pressure @ inlet (psi): _____ **Pressure @ end of system (psi): _____**

Tire pressures all the same: Y N **Are motor leads worn: Y N**

Nozzle type: impact rotating spray fixed spray lepa

Nozzles all the same: Y N **Are nozzle drops leaking: Y N**

Nozzle output check (size/gpm): _____

Pressure regulators: Y N **Pressure regulator size (psi):**

Pressure regulator check (psi out): _____

Span boots leaking: Y N **Span drains working: Y N**

Are strain reliefs on wires in control box and tower boxes: Y N

Pipe line gaskets leaking: Y N **U-joints checked: Y N**

Gearbox fluid level checked: Y N

For Diesel engines/generator sets

Radiator fluid level good: Y N **Anti-freeze good: Y N**

Is radiator airflow blocked: Y N **Is fan functioning: Y N**

Battery corrosion free: Y N **Is there a canopy over engine: Y N**

Wheeline_____

System Length: _____ **System size:** _____

Pressure @ lateral valve (psi): **Pressure @ end of system (psi):**

Valve leaking @ lateral: Y N **Is hose connection leaking: Y N**

Are nozzles positioned correctly: Y N **Nozzles all same size: Y N**

Are drain valves shutting off: Y N **Do drain valves open: Y N**

Are any risers leaking: Y N **Do all nozzles rotate freely: Y N**

Are gaskets between sections leaking: Y N

Have all nozzles been checked for wear: Y N

Solid set_____

Number of laterals: _____ **Lateral size:** _____

Laterals length: _____

Pressure at laterals inlet/valve (psi): _____ **Pressure at end of laterals (psi):** _____

Are any risers leaking: Y N **Do all nozzles rotate freely: Y N**

Have all nozzles been checked for wear: Y N

Signature: _____

Payment

The auditors will receive payment for the audits from the Energy Division upon receipt of completed/signed paperwork. Auditors will receive $225 for a pump test and an additional $50 for a booster pump on the same system. Auditors will receive $275 for the system analysis and a maximum of $375 if additional systems are attached to the same pump. The maximum payment from the Energy Division for any complete pump test and system analysis will total $650.

Example: If one pump and one booster pump run two pivots and both pivots were audited, the auditor would receive $375 for doing the audit of both pivots. If this auditor also performed the pump and booster pump test on those pumps connected to the two pivots the auditor would receive a total payment of $650 for the audits of the pumps and pivots.

Note: If additional charges to perform the audit are required they are between the participant and the auditor. The Energy Division will not be held responsible for these charges.

Requirements for audits payment:

Audit paperwork must contain a signature and date from the farm owner or manager for payment to be received. Paperwork must be completely filled out and legible. The auditor for his/her own records should retain a duplicate copy. Completed audit paperwork must be mailed to:

Idaho Energy Division
AIM Team
P.O. Box 83720
Boise, ID 83706-0098

For questions regarding payment send inquiries to AIM@idwr.idaho.gov or call 1-800-334-SAVE.

Loan

The agriculture loan program is designed to fill a niche that traditional lending institutions generally do not cover. Loans are available for on energy efficiency upgrades. To qualify, a project must reduce energy consumption.

Any improvements that are required as a result of the Irrigation Audit will be eligible for a loan from the Energy Division.

The loan interest rate is 4% with a repayment period of 5 years or less with the maximum loan cap of $100,000.

The applicant must complete the credit application process and begin installation of project within 90 days of approval. After 90 days a new application must be submitted.

No loans will be given for used equipment.